live and exist in a vacuum. It is this neglect of the part played by the air which causes error; it is this which prevents a clear conception of the mechanism of the circulation of the hot gases within a reverberatory furnace. When the presence of the air is taken into consideration, the problem becomes very clear.

What is it that forms the flame? It is a mixture of gases at a high temperature, reacting upon each other (combustion) and releasing in this manner a sufficient amount of heat to raise the products of their combustion to incandescence. The solid particles of carbon, by their incandesence, give to the flames that especial appearance which impresses the imagination and causes the flame to be attributed to some infernal power. But, in reality, the idea which the author desires to convey in regard to the " flame " may be better understood if the flame is considered as a current of incandescent gas. This approximation is sufficiently accurate for the purpose.

The reverberatory furnace is accordingly considered as an apparatus immersed in a liquid, the air, which weighs 1 kg 29 per cubic meter, in the interior of which there circulates a current of incandescent gases, that is to say, a liquid much lighter than the air.

It is known that the coefficient of expansion of gases is -5--^-; if, therefore, the specific weight of air at 0° is considered as unity:

at	273°	its specific weight will be £
	546°	i
	819°	*i*
	1092°	i
	1365°	$
	1638°	i
	1911°	£

and as the specific weight of air at 0° is 1 kg 29:

'? at 273° its specific weight will be 0 kg
645

;«	546°	0	430
|	819°	0	323
J	1092°	0	258
|	1365°	0	215
jj	1638°	0	184
ik	1911°	0	161